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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,947	08/28/2003	William M. Bishop	717664.10	1946
27128	7590	05/04/2004	EXAMINER	
BLACKWELL SANDERS PEPER MARTIN LLP			DRAKE, MALIK N	
720 OLIVE STREET			ART UNIT	
SUITE 2400			PAPER NUMBER	
ST. LOUIS, MO 63101			3744	

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/604,947	Applicant(s) BISHOP ET AL.	
	Examiner Malik N. Drake	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 13 is/are rejected.
- 7) ☒ Claim(s) 11, 12 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/26/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

Claims 1-14 are objected to because of the following informalities: Applicant has labeled the claims as "c1", "c2", "c3", etc. (as opposed to "claim 1", "claim 2", "claim 3", etc.)" Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6, 7, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Bishop et al. (U.S. Patent No. 5,511,905), hereinafter Bishop.

The invention of Bishop discloses a heat exchanger comprising at least one elongated inner conduit (80); an outer conduit (86) surrounding at least a portion of the inner conduit; a plurality of centralizers (see figure 5) mounted inside the outer conduit positioning the inner conduit in a coaxial relationship with the outer conduit and defining an annular space; a pump system (19) to circulate warmant (can be sea water) through the annular passageway between the inner and outer conduits; and a high pressure pumping system (19). The inner conduit is formed from cryogenically compatible materials strong enough to withstand the high pressure of a dense phase fluid from the high pressure pumping system (can be nickel steel alloy) and the outer conduit is

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formed of non-cryogenically compatible materials (see column 13, lines 9-19). The flow path of the dense phase fluid and warmant through the heat exchanger is generally counter (column 12, lines 64-67).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-5, 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bishop in view of Michie, III et al. (U.S. Patent No. 3,777,502), hereinafter Michie.

The invention of Bishop has been previously discussed. Bishop lacks disclosure of the inner conduit including a plurality of conduits positioned by centralizers. Michie shows that it is known to have an inner conduit include a plurality of conduits poisoned by centralizers (see figure 4).

Accordingly, it would have been obvious to one of ordinary skill in the art, when having a knowledge of these references at the time of the invention, and when considering the prior art as a whole, to have modified the apparatus of Bishop to include an inner conduit that includes a plurality of conduits for the purpose of increasing heat interface.

Bishop lacks disclosure of an intermediate conduit surrounding at least a portion of the inner conduit. Michie shows it is known to have an intermediate conduit surround an inner conduit (see figure 7).

Accordingly, it would have been obvious to one of ordinary skill in the art, when having a knowledge of these references at the time of the invention, and when considering the prior art as a whole, to have modified the apparatus of Bishop to include an intermediate conduit that at least partially surrounds the inner conduit for the purpose of increasing heat interface.


Bishop also lacks disclosure of specific non-cryogenically compatible materials. However, Applicant has failed to disclose any criticality or unexpected results due to this claim limitation. Therefore, the limitation is deemed to be no more than an obvious design choice between materials of construction.

### ***Allowable Subject Matter***

Claims 11, 12, and 14 would be allowable if rewritten to overcome the objection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Any inquiry concerning this communication should be directed to Examiner Malik Drake at telephone number (703) 305-0249 and/or fax number (703) 872-9306. The Examiner's work schedule is 9:30am – 8:00pm, Monday through Thursday.

  
DENISE L. ESQUIVEL  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700